

The study on the functions and services presented in electronic market of production companies in Isfahan

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Abstract

Information management has considerable importance among major processes of supply chain and plays key role in integrating members of chain. Therefore, industries should coordinate themselves with supply chain technologies and electronic commerce. Otherwise, it is impossible to penetrate into new markets and they cannot preserve their market share. One model of electronic commerce is business-to business electronic commerce markets in which the focus is on the relationship between relationships of these organizations. This new information ground has transformed the relationship between organizations and their communication including changing communication manner of supply chain members in market. Regarding importance of electronic markets in supply chain management of organizations and businesses, few studies are conducted about this. Based on this and regarding necessity of research in this field, this research tries to study the role and effects of electronic markets' functions in business-to-business field on supply chain management and particularly, supply chain functions like product unit cost and customer response time. This is descriptive survey and statistical population is experts of 20 production companies in Isfahan. Inclusion criteria for companies are the extent and application of electronic commerce concepts. Results are summarized by SPSS software and analyzed by using descriptive and inferential statistics. Regarding results of data analysis, an important point in this research is high effect of information service and logistic on both performance criteria which indicates considerable effect of sharing information related to the products, suppliers and customers and also practical concepts of electronic logistics which increase integrity and coordination of supply chain.

Keywords: electronic commerce, supply chain, business-to-business commerce.

Introduction

Great companies have found that optimal supply chain management (SCM) increases success through obtaining direct and indirect profit in supply chain. Therefore, SCM has attracted managers and researchers. This approach has been shaped from early 1990s and now it is governing factor in taking strategies and effective way in order to create value for customers (Amin & Razmi, 2009). Managers traditionally focus on internal operation in order to increase revenue, while SCM emphasizes integration of internal activities and required decision makings for communication with foreign partners in order to promote competitiveness capacity [1]. Supply chain structure includes combination of potential suppliers, producers, distributors, retailers, customers and etc. that its emphasis is improving servicing customer, profitability and performance of business [2]. In fact, supply chain structure includes combination of potential suppliers, producers, distributors, retailers, customers and etc. that its emphasis is improving servicing customer, profitability and performance of business [3]. It should be mentioned that when we call a supply chain successful that products or services delivered in right size, optimal quality and in certain time and place [4].

In recent years, numerous studies have emphasized the importance of sharing information in supply chain. Regarding this, there is no doubt that information technology can reduce costs. Forming a business model by using information is important. In a study on 329 European companies by Normilaskov in 2008, it was shown that electronic business has positive effect on the performance of supply chain. Different researchers of OECD have considered different approaches for studying effects of electronic commerce. Some have studied its effect in macro level in different countries or certain area [5]. Some have analyzed effects of information technology and communication concerning its activities like value chain. Some have studied small or medium sized enterprises or retailers. Increasing attention of organizations and governments to electronic business indicates importance and effect that it has on general environment of organizations and different activities of organizations (particularly). In developed countries, using electronic commerce expands due to its benefits but in developing countries, it encounters with different problems. Electronic commerce has emerged fundamental changes in business transactions, market regulation and market competitive environment [6].

While huge investments have been done in electronic commerce, managers and researchers are seeking to determine criteria for measuring effect of these investments on improving their business performance. Measurement criteria used for these effects differ depending on purpose of each research. Regarding that supply chain management and business processes are intertwined and supply chain management is known as a set of business processes between organizations and departments, this research tried to measure effect of electronic markets on supply chain management. Therefore, function of electronic markets have extracted from literature that 9 selected functions were divided into three groups 1) information, 2) transactions and 3) added value and by selecting two criteria which indicates performance of supply chain of organizations, this effect has been studied [7]. Performance criteria used in this research are product unit cost and customer response time. On the other hand, benefits of using electronic markets and their importance for organizations participating in market were studied. In order to study above subject, a questionnaire was designed and presented to managers and employees of

20 manufactures in Isfahan. Regarding problems of electronic commerce in Iran, this method was not implemented completely for most companies and as a result, concepts of electronic commerce are unknown for people [7]. For this reason, some great production companies were used that dealt with electronic markets and questionnaires were distributed among managers and employees who were directly involved in this field. Besides, questionnaire was distributed among some faculty members who have written papers about this topic. This research has studied functions and services presented in electronic market of production companies in Isfahan.

Electronic commerce concept

We can argue that there are definition for electronic commerce per researcher who has studied it. Simple definition is "trading with electronic tools". Weakness of this definitions is that some may misunderstand that electronic business is only done by using electronic tools. According to Catch definition (2001) "electronic market is a centralized market in which different buyers and providers have gathered and by sharing information, sell and buy products and services". Information technology in this market facilitates transactions. Participants in this market include buyers and sellers, technology providers and investors. In other words, Baucus (1998) defines electronic market functions as following: "putting together the buyers and sellers, facilitating transactions, providing legal infrastructures, gathering data related to products and identifying price. OECD has defined electronic commerce as "doing business of goods and services through world wide web, either those goods and services that can be delivered by world wide web or those that lack this capacity" [8].

In another definition, electronic commerce is buying and selling products, services and information by using computer networks including World Wide Web.

Winston and Kakata (2003) defines electronic commerce from four point of views:

1. Communication view: electronic commerce presents information related to products, services or payments through telephone lines, computer networks or any other electronic device.
2. Business process view: electronic commerce is application of technology in automating business transactions and work flows.
3. Service view: electronic commerce is a tool which addresses interests and demands of companies, customers and management, reduces service cost, improves product quality and increases product delivery speed.
4. Online view: electronic commerce has capacity for buying and selling products and information and other web services.

It is clear that electronic business can be described in many fields but the most useful description related to business. Electronic business is trading through new communication tolls which encompasses all aspects of business like business market, ordering, supply chain management and monetary transactions (Ganasaran et.al, 2002).

Electronic commerce models

Using internet as the most important communication field in electronic commerce along with increasing growth of communication network has created different models in this business.

These models are product of interaction three groups of people in the society from economic view including government or related organizations, business and economic organizations, product producers and service providers and common people who are end buyers of products and services [9].

Table 1: different electronic commerce models

	Business	Consumer	Government
Business	B2B	B2C	B2G
Consumer	C2B	C2C	C2G
Government	G2B	G2C	G2G

B2B and C2B models

These two models indicate reciprocal relationship between producers of different products with end users and buyers. Today, many products from raw industrial materials to automobile, machineries and products like food, cultural products, flower and plants, gifts and various services like hotel reservation, plane ticket or renting car are bought in online form. In these two models, producers can identify final consumers and present products directly to them (B2C). Consumers can also select among producers those who have optimal conditions (C2B).

B2C and C2B models have advantages like buying products with lower prices. Another advantage is sending product to the given destination. Main difference between B2C and C2B models is in manner of purchase and communication between customers and producers.

In B2C model, buyers have enough information about required product, supplier company and price of product and they use this model due to lower price of product in internet. But in C2B model, customer information is typically limited to specifications of required product and there is not such information about supplier companies and customers select the best offer among other offers. In other words, in B2C, customer offers purchase to a producer or seller but in C2B model, this is suppliers who offer something to customer [10].

C2C model

This method in electronic commerce has developed based on the model created by Pear Omidvar owner and designer of eBay. In C2C model, sellers find the opportunity to present their products in a widespread context to end buyers. Omidvar says the idea for selling product through website was first used by him to sell cookies baked by his wife I Log Angeles. He has used B2C model in designing his site and gradually by developing this site, he designed a new model based on the auction of second-hand goods in real world. He tried to provide a ground for various internet users in which sellers can sell their goods. But the main difference of this auction is numerous number of participants in auction. Today, due to widespread use of eBay, this site is known as C2C symbol. eBay has created 20 billion dollar income for its owners in 2002.

Models related to government

Models related to the government can be divided into three classes. First class includes G2B and B2G models. In these two models, organizations, institutions and public centers have relation with economic centers, businesses and production companies. In this structure, parties refer to each other and interact through computer networks. These include cases like taking license from government and related organization, paying money requested by government, taking information from public institution and other cases which are summarized in these two models. Major advantage of this structure is saving in various operation for government and related organizations and reducing time for these works and also reduces energies which are wasted for low return work in organizations. Second class includes G2C and C2G models. This model is about the relationship between people and public organizations and the relationship between government and people is about services that government can present to people or facilitate financial relationship of people and government about tax. Activities of these two model includes cases like taking identification cards, bank operation and taking information from government. Third class is based on the G2G model which provides relationship between two public organizations or ministries and cases like relation of municipalities with police, ministry of interior and martial bodies. In this model, exchanges between electronic processes includes trade transactions or it is limited to information exchange.

B2B model

In B2B model, relation between two or several organizations, economic institution, producers of raw materials, producers of consumer products and providers of various services is considered. In fact, this model can be considered as expansion of old model electronic data interchange (EDI). B2B model includes operation conducted in EDI i.e. information exchange, data, order, buying and selling. But in new model, communication process is very open and flexible such that producers of raw materials, different products, sellers and distributors can have direct relationship with each other. This also means reduction of intermediaries which reduces the price. These factors has caused that this model is considered as the main electronic commerce and during its short life time, it has created considerable income for investors. Based on statistics, merchants and activists in this field could reach from 43 billion dollar income in 1998 to 1300 billion dollar in 2004. In this research, this electronic commerce model is considered [11].

Methodology

In order to study effect of electronic market functions on supply chain management of an organization present in this market, descriptive-survey method was used. Questionnaire was designed based on the literature and study population was experts of 20 manufactures in Isfahan. For this reason, questionnaire was designed as Likert type and presented to people.

Frequency of responses**Type of company**

First question is about type and scope of respondent company. Companies are divided into three groups holding, manufacture and production. Purpose of this question is measuring reliability of this research for certain types of companies.

Table 1: frequency of respondents based on company type

	Type of company	Frequency	Data percent	Valid data percent	Cumulative percent
Valid data	Holding	13	9.0	9.0	9.0
	Commercial unit	50	34.5	34.5	43.4
	Manufacture & production	82	56.6	56.6	100.0
	Total	145	100.0	100.0	

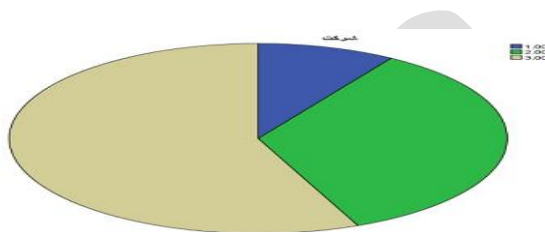


Fig 1: comparing number of respondents based on the company

As seen in table 1 and figure 1, most respondents are working in companies which are directly involved in manufacture and production. In fact, majority of statistical population are those people who work in production factories. As a result, results of this research is valid for production companies which are directly involved in production and manufacture.

Duty and position of respondent

Second question is about position and duty of respondent in company. Purpose of this question is measuring the application of practical concepts of electronic commerce in different parts of organizations.

Table 2: frequency table of respondents based on duty

Position	Frequency	Percent of data	Valid percent	Cumulative percent
Top management	3	2.1	2.1	2.1
Environmental/security/control	1	0.7	0.7	2.8
Marketing	8	5.5	5.5	8.3
Purchase/raw material	39	26.9	26.9	35.2
Financial	2	1.4	1.4	36.6
Research & development/ engineering	4	2.8	2.8	39.3
Logistics	24	16.6	16.6	55.9
Manufacture & production	7	4.8	4.8	60.7
Quality	10	6.9	6.9	67.6
Sale	42	29.0	29.0	96.6
Human resources	5	3.4	3.4	100.0
Total	145	100.0	100.0	

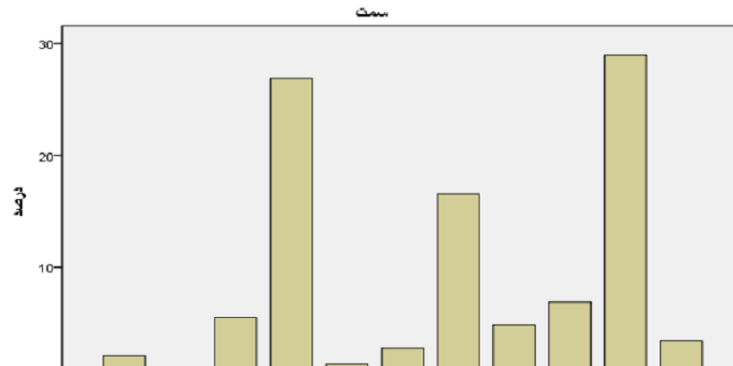


Fig 2: frequency of respondents based on duty in company

As table 2 and figure 2 indicate most respondents were in sale section and raw material purchase. This shows that people in these positions are familiar with electronic commerce concepts in Iran. For this reason, we can justify low number of respondents with environmental, security and control positions.

Effect of electronic commerce effect on supply chain management

Tables 3 and 4 indicate number of correct responses to each question. Among 145 respondents to questionnaire, in effect of electronic market functions on reducing product unit cost, two people have not answered question related to shared services and 19 people have not answered to business intelligence services, six people to trust increasing services, two people to logistic services question and 7 people to interactive services question (table 3-4). In next section which measures effect of electronic market functions on reducing customer response time, some questions are unanswered. Question related to business intelligence has lowest answer such that among 148 respondent, 13 people did not answer it. Question related to trust increasing services, logistic services, financial services and interactive services had 2, 1, 1, and 5 unanswered

question (table 4-4). Among reasons for lack of answer to this question, we can refer to not using these services in related companies and unfamiliarity with these concepts.

Table 3: frequency table of answered questions in product unit cost

	Data					
	Valid data		Missed data		Total	
	Number	Percent	Number	Percent	Number	Percent
Information services	145	100.0	0	0	145	100.0
Shared services	143	98.6	2	1.4	145	100.0
Business intelligence services	126	86.9	19	13.1	145	100.0
Fixed pricing mechanism	145	100.0	0	0	145	100.0
Dynamic pricing mechanism	145	100.0	0	0	145	100.0
Logistics services	143	98.6	2	1.4	145	100.0
Financial services	145	100.0	0	0	145	100.0
Interactive services	138	95.2	7	4.8	145	100.0

Table 4: number of answered responses in customer response time

	Data					
	Valid data		Missed data		Total	
	Number	Percent	Number	Percent	Number	Percent
Information services	145	100.0	0	0	145	100.0
Shared services	145	100.0	0	1.4	145	100.0
Business intelligence services	132	91.0	13	13.1	145	100.0
Fixed pricing mechanism	143	98.6	2	0	145	100.0
Dynamic pricing mechanism	145	100.0	0	0	145	100.0
Logistics services	145	99.3	0	0.7	145	100.0
Financial services	144	99.3	1	0.7	145	100.0
Interactive services	140	96.6	5	3.4	145	100.0

Important of benefits obtained by electronic commerce

Table 5 shows number of correct responses to questions related to market benefits

Table 5: frequency table of questions answered for benefits caused by electronic markets

	Data					
	Valid data		Missed data		Total	
	Number	Percent	Number	Percent	Number	Percent
Reducing search cost	145	100.0	0	0	145	100.0
Reducing transaction cost	145	100.0	0	0	145	100.0
Reducing access to market	145	100.0	0	0	145	100.0
Increasing market response time	145	100.0	0	0	145	100.0
Reducing supply chain costs	145	100.0	0	0	145	100.0
Reducing interval between invoice & payment	144	99.3	1	0.7	145	100.0
Reducing time of supply & sale	144	99.3	1	0.7	145	100.0
Improving inter and intra organizational communication	145	100.0	0	0	145	100.0
Direct electronic processes	143	98.6	2	1.4	145	100.0
Reducing inventory	145	100.0	0	0	145	100.0
Reducing delivery time	143	98.6	2	1.4	145	100.0
Introducing new products in market	145	100.0	0	0	145	100.0

Conclusion

Results of this research shows that information services, logistic services and dynamic transactions have the highest effect on reducing product unit cost and shared services, information services and logistic services have the highest effect on reducing customer response time. An important point in this research is high effect of information and logistic services on both criteria which indicates considerable effect of shared information related to the products, suppliers and customers and practical concepts like electronic logistics which increases integration and coordination of supply chain. In other part of research, benefits caused by presence in electronic markets were ranked and results showed that importance of benefits is caused by reducing costs and reduction of costs is an important reason for presence of organizations in electronic markets. In addition, introducing of new product in market through electronic markets is a benefit that has highest importance in given industries.

Suggestions

Since results of this research is about effect of electronic business function and high effect of information and shared services on supply chain; therefore, developing investment incentives is suggested for information and communication networks by private section.

Results indicate non-application of useful services like interactive services which shows lack of integrity in Iranian supply chain; therefore, it is suggested that Iranian managers obtain more positive attitude toward these services and try more to use these services which leads to integration of supply chain.

Results of this research indicate that in Iranian companies, concepts of electronic business are used in sale and purchase; therefore, the need for teaching electronic commerce concepts and using them is necessary among all elements.

References

1. Boughton, N., & Kehoe, D. (2001). Internet based supply chain management – A classification of approaches to manufacturing planning and control. *International Journal of Operations & Production Management*, Vol. 21(4), 516-524
2. Chan, F.T.S. (2003) "Performance Measurement in a supply chain ", *Advanced Manufacturing Technology*, Vol 21, No.9, pp. 534-548
3. Cooper, M.C & Lambert, D.M. (1997) " supply chain management: implementation issues and research opportunities. *The international journal of logistics management*, Vol.8, pp.1-13
4. Cooper, M.C & Lambert, D.M. (1997) " supply chain management: implementation issues and research opportunities. *The international journal of logistics management*, Vol.8, pp.1-13
5. Guhasekaran, Etal, E- Commerce and its impacts on operations management , *international journal of Production economics* No 75, 2002. PP 185-197
6. Hugos, M., (2003), *Essentials of Supply Chain Management*. Hoboken, NJ: Wiley.
7. Kellerr, G. & Warrack, B. (2000) "Statistics for Management and Economics", Thomson Learning, Vol.18, pp 25-73
8. Simatupang T.M., sriharan R. (2002), "The Collaborative Supply Chain", *The International Journal of Logistics Management*, Vol. 13, No. 1, pp. 15-30
9. Simatupang T.M., sriharan R. (2008), "Design for supply chain collaboration", *Business Process management Journal* , Vol. 14, No. 3, pp. 401-418
10. Stevens, G.C. (1989) "Integrating the supply chain". *International Journal of Physical Distribution and Materials management*, Vol.19, pp.3-8